




ASYMMETRIC POLYIMIDE MEMBRANES

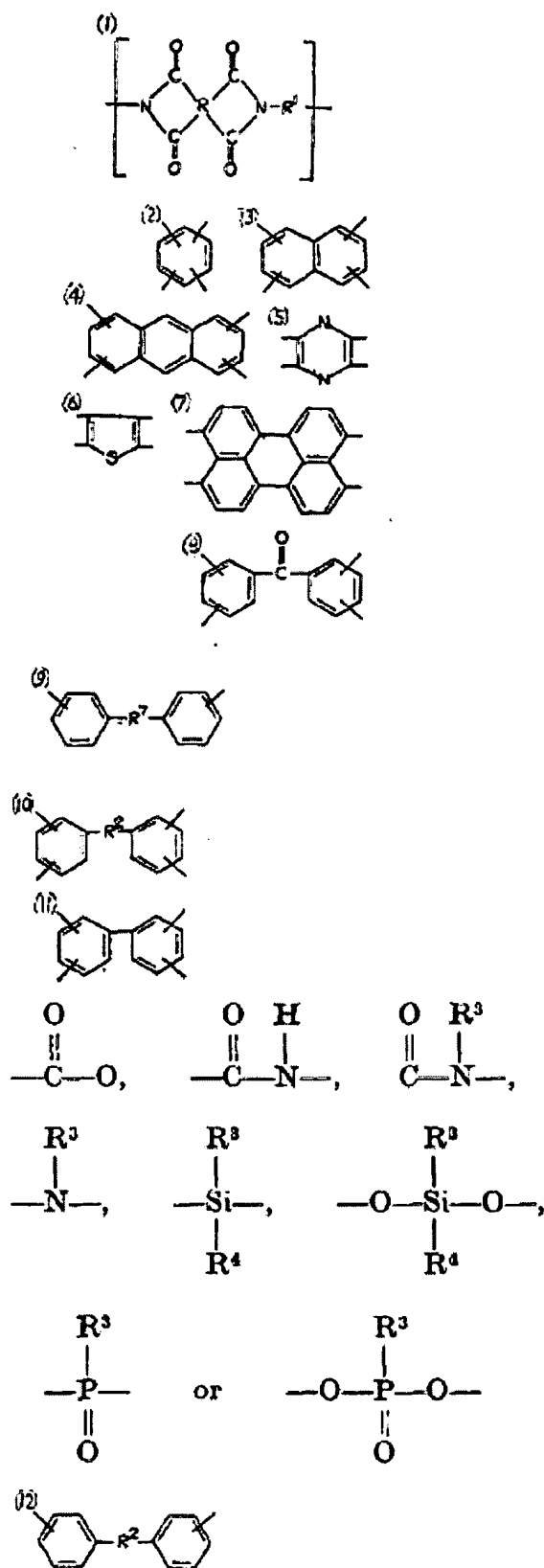
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Abstract of GB1435151

1435151 Polyimide membranes E I DU PONT
 DE NEMOURS & CO 19 July 1973 [20 July 1972]
 34397/73 Heading B5B [Also in Divisions B1 and
 C3] Microporous polyimide membranes, asym-
 metric in that they are composed of a thin
 relatively dense barrier layer on at least one
 surface and a less dense layer, are obtained from
 an aromatic polyamic acid solution. The solution
 in solvent A is formed into a membrane which is
 contacted with a cyclizing composition
 comprising a C 1 -C 6 aliphatic carboxylic an-
 hydride and a tertiary amine with or without a
 solvent B. If the tertiary amine is a solvent for the
 polyamic acid then a solvent B which is miscible
 with A and a non-solvent for the polyamic acid is
 used. When the tertiary amine is a non-solvent
 for the polyamic acid then solvent B whether
 miscible with A or not or capable of dissolving the
 polyamic acid or not, need not be used. In the
 latter case the tertiary amine must be miscible
 with solvent A. The polyimides have the following
 formula and, depending on the choice of R and
 R<SP>1</SP>, they may be soluble in a
 common organic sol- vent or not. For insoluble
 membranes R is selected from the group
 comprising and E<SP>1</SP> from phenylene,
 tolylene, naphthylene, biphenylene, anthrylene,
 pyridinediyl and in which R<SP>7</SP> is
 oxygen sulphur or methylene. Other radicals
 disclosed for R are and where R<SP>2</SP> is
 C 1 -C 3 alkylene or haloalkylene, oxygen,
 sulphur, -SO 2 -, in which R<SP>3</SP> and
 R<SP>4</SP> are C 1 -C 6 alkyl or phenyl, and
 for R<SP>1</SP> where R<SP>2</SP> is as
 defined above. The membranes may be washed,
 for example in benzene followed by ethanol and
 then by water, and then air-or vacuum-dried.
 Example 86 illustrates the preparation of the
 membrane in the form of a porous fibre by
 extruding the polymeric acid into a bath of the
 cyclizing agent.



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